

REMARKS

Claims 5-19 are pending in this application. By this Amendment, claims 5 and 6 are amended and claims 13-19 are added. No new matter is added. Support for the amendment is provided, for example, at page 3, line 25 to page 4, line 5, page 5, lines 14-26, page 10, lines 12-20 and FIG. 2A.

In the Office Action, claim 5 is rejected under 35 U.S.C. §102(b) over U.S. Patent No. 6,284,048 to Van Bilsen et al. ("Van Bilsen"); claim 6 is rejected under 35 U.S.C. §103(a) over Van Bilsen in view of U.S. Patent Application Publication No. US2002/0066412 to Yao et al. ("Yao"); claim 9 is rejected under 35 U.S.C. §102(b) over Van Bilsen in view of U.S. Patent No. 6,162,706 to Dutartre et al. ("Dutartre"); and claim 10 is rejected under 35 U.S.C. §102(b) over Van Bilsen in view of Yao and Dutartre. These rejections are respectfully traversed.

As set forth in Applicants' background, slip dislocation is a problem with silicon epitaxial layer formation due to thermal stress. This is partially relieved by forming a pocket on a top surface of the susceptor. However, it does not sufficiently reduce the problem. Applicants have found that this problem can be reduced by forming the susceptor of graphite coated with SiC and heat treatment to form the susceptor to have a warped inverted U-shaped longitudinal sectional shape. This is shown, for example, in Applicants' Fig. 2A in which the susceptor 2 is formed by heat-treatment to warp to an inverted U-shaped bottom with a warp amount of β . As a result of this heat-treatment warpage to the longitudinal section of the susceptor, the radius of curvature of the upper pocket 21 is changed to form a reduced height D- β , which is the distance between a bottom surface of the inner peripheral side part in the pocket and a rear surface of a silicon single crystal substrate supported on the susceptor.

By reducing this distance through the warped inverted U-shaped longitudinal sectional shape, preferably to be less than 0.4 mm as recited in claim 6, slip dislocation has been found to be reduced as shown in Applicants' Table 1.

Van Bilsen fails to teach or suggest a warped inverted U-shaped longitudinal sectional shape susceptor as claimed. The structure (element 62) referred to in the Office Action is a small recess on a far end of the susceptor for receiving post 64. The remainder of the susceptor surface is horizontal and flat. Thus, the susceptor in longitudinal cross-section does not have a warped inverted U-shape as claimed. Accordingly, because each and every feature of independent claim 5 is not provided in Van Bilsen, independent claim 5 and claims dependent therefrom are not anticipated.

Van Bilsen also fails to appreciate the problem overcome by the invention. Yao and Dutartre, alone or in combination, fail to overcome deficiencies of Van Bilsen with respect to independent claim 5. The subject matter of claim 5 and claims dependent therefrom thus also would not have been obvious in view of Van Bilsen alone or in view of Yao and/or Dutartre. Withdrawal of the rejections is respectfully requested.

In the Office Action, claims 5 and 7 are rejected under 35 U.S.C. §102(b) over Japanese Patent Application No. JP2000-355766 (Kokusai); claims 6 and 8 are rejected under 35 U.S.C. §103(a) over Kokusai in view of Yao; claims 9 and 11 are rejected under 35 U.S.C. §102(b) over Kokusai in view of Dutartre; and claims 10 and 12 are rejected under 35 U.S.C. §102(b) over Kokusai in view of Yao and Dutartre. These rejections are respectfully traversed.

The Office Action alleges that Fig. 2 shows a pocket formed in an inverted U-shape. However, both crevices 31 and 32 are taught to be formed by a Zagury process, which is a mechanical working, such as by milling or cutting. That is, the susceptor itself is not warped into an inverted U-shape longitudinal section, but remains flat and includes a mechanically

formed crevice 31 and 32. Because the susceptor is not formed to be warped during heat treatment as claimed, the shape of the upper crevice 31 is not changed. Accordingly, because each and every feature of independent claim 5 is not provided in Kokusai, independent claim 5 and claims dependent therefrom are not anticipated.

Yao and Dutartre, alone or in combination fail to overcome deficiencies of Kokusai with respect to independent claim 5. The subject matter of claim 5 and claims dependent therefrom thus also would not have been obvious in view of Kokusai alone or in view of Yao and/or Dutartre. Withdrawal of the rejections is respectfully requested.

Claims 13-18 are added. Apparatus claim 13 specifies that a depth of the pocket has been reduced by a warp amount during the heat-treatment warping of the inverted U-shaped longitudinal section shape. Claim 13 is supported by Fig. 2A and page 5, lines 14-26. Claim 14 is based on claim 6. Claims 15-16 are based on claim 9. Claim 17 is a method claim directed to formation of a vapor phase growth apparatus with the structure recited in claim 5. Claims 18 and 19 depend from claim 17. Claims 13-16 are allowable for their dependence on allowable base claim 5 and for the additional features recited therein. Claims 17-19 are also allowable.

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 5-19 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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